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ABSTRACT

The Tucson Early Education Program is working with "orchestrated instruction," a cooking experience which is an experimental attempt to pull together the various components of early education. Individual subskills such as arithmetic and language arts are learned for a larger project that the children are interested in, and skills are developed as the need arises. The project discussed here is cooking stew in a third grade classroom. Preparatory discussion and a colorful, illustrated storybook prepared by teachers heightened the interest the children had in the project, and they cheerfully took on the various tasks involved in making stew, from buying the ingredients and collecting the utensils to following the recipe and tasting the fruits of their efforts (gratification). Post-stew exercises presented the opportunity for further learning as children wrote brief stories about the cooking experience using new "stew" vocabulary words. Skillful interaction by the head teacher and her aides weaves the substantive content of academic subjects into the turned-on group activity, and the children receive immediate and gratifying feedback for their new skills. (MH)

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ARIZONA CENTER FOR EARLY CHILDHOOD EDUCATION

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ORCHESTRATED INSTRUCTION: A COOKING EXPERIENCE

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PS 002699

Ochoa School
District No. 1
Tucson Public Schools
August 1, 1969

ACKNOWLEDGEMENT

The University of Arizona and Tucson School District No. 1 engaged in a Cooperative Project for the years 1965-1968. During this time an educational program was developed through work in eight schools, with sixty-eight classes involved by June 1968. This Cooperative Project was funded largely through Title I of Public Law 89-10. The instructional resource materials now being published by the Arizona Center for Early Childhood Education owe their beginnings to this Project and the teachers who worked in it. The Project Directors were Marie M. Hughes, College of Education, University of Arizona and Jewell Taylor, Primary Supervisor, Tucson District No. 1.

The Arizona Center for Early Childhood Education is administered through the University of Arizona's College of Education, F. Robert Paulsen, Dean. It is an interdisciplinary organization and is directed by Marie M. Hughes. Ronald Henderson, Department of Educational Psychology, is an associate member of the directorate.

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COOKING EXPERIENCES USED IN THE TUCSON EARLY EDUCATION PROGRAM

A frequent activity of all classrooms working with the Tucson Early Education Program pertains to food. At least as often as every other day there is a tasting experience to introduce the children to new foods. Fresh fruits and vegetables, nuts, and dried fruit are often used. At this time the special taste of the food is talked about; its attributes of juicy, sweet, crisp, crumbly, seeds or core, or peelings are identified and compared with other foods they know. Since the children have small portions, the teacher's preparation of the food is minimal. For additional work with food, each classroom has a hot plate and some utensils for real cooking. A portable oven is available for each building.

A cooking experience is rich in learning opportunities. There is a job to be done that has a beginning and end that the child can recognize. The work follows certain rules and procedures. The cooking experience can be organized so that all may be involved since there is division in the labor and more than one "batch" of food must be prepared and served. This may mean waiting until the second day before your turn comes. Children soon learn that they will always get their turn thus experienceing little or no frustration in their waiting.

Language use is readily evoked with the labeling of the tools of cooking and the ingredients used. The description of the attributes of the tools and foods add adjectives and adverbs. Children readily relate to their home experience. Contrasts and comparisons are made; also, they recall previous cooking activities at school. "What will happen when _____?" is often heard as they make application of their previous experiences. As usual, the cooking activity contributes to reading with its recipe, dictated stories of individual adventures, and provides content for the child's own writing.

The cooking activity offers substantive content in several fields. For example, there is the use of new tools (tongs, strainers). The

difference in time saved by the use of an electric beater versus hand beater can be calculated. The exactness with which a tool (technology) allows one to cut or grind evenly may be shown with blenders and grinders of different kinds versus human cutting with knife or scissors. Scientific facts can be generalized from the childrens' experience that heat or cold, especially when intense, changes the form of matter. The same may be said of liquid added to dry ingredients. Also, interaction of ingredients are experienced with the use of soda, yeast, seasonings, and coloring matter.

Mathematical concepts and manipulations are used constantly. Measurements of amounts called for by recipes have to be doubled, tripled, or halved. Care in measurement and adherence to the required sequence of ingredients are constraints the child must adhere to or his results will not be satisfactory. The division of the food is always required. How many can each have? How may we cut it equally?

One of the processes important to the Tucson Early Education Program is that of gratification. A child must receive gratification from his school experiences if he is to want to return to school; indeed, the experiences that he views as positive and relevant to him may be a strong factor in his attitudes toward learning in the school and toward the people with whom he associates there. His gratification comes from the acceptance of him as a person and the assurance given him through reinforcement and the sense of adequacy and confidence that comes from learning new things. The instructional materials contribute to his sense of himself, as a doer, if he can manipulate and control, change their form, and use them for new purposes. Being able to do today what one could not do yesterday is a way the child has of seeing himself less impotent, and more grown up. Learning under such conditions provides some immediate pay-off. The proof of the pudding is in the eating which offers a basic, although primitive, satisfaction.

The present document describes a class at work with the making of stew as the cooking activity. Placed at the end of the case study are exact pages from the dictated stories, childrens' own writing, and some work exercises prepared by the teacher. The story was written by Mrs. Violet Nelson, Program Assistant and Mrs. Betty Richards, teacher at Ochoa School.

This should not be read as a recommendation that all classes make stews, but as an example of the kind of orchestration such planned activity provides. All four goal areas are well represented in the activities, and the materials prepared with, and for, the children. The Process of Orchestration is valued in the Tucson Early Education Program because it is believed that skills, attitudes, information, and aspirations are not acquired independently of one another. The emphasis we give to environment arrangement and work that, hopefully, evokes complete involvement of the child is recognition of the process of orchestration.

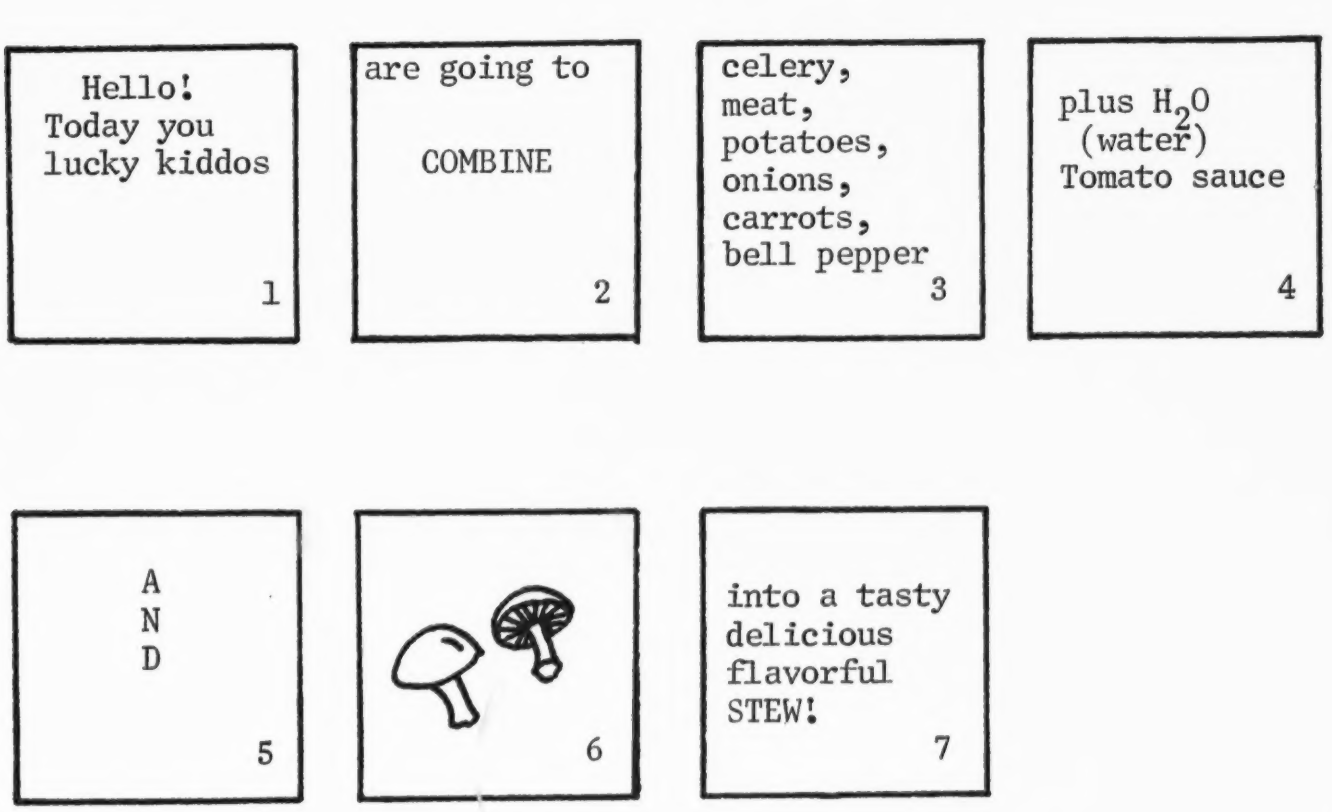
The number of cooking activities that might serve the Program goals are numerous; for example, making and icing of cupcakes, a salad for lunch, chicken soup with noodles, or rice or bread pudding with raisins. Ice cream making is popular and the action of salt on ice is of interest to children. A cooking activity can provide for much experimental work on the part of children.

Marie M. Hughes
Director, Early Education Center
Professor, Educational Psychology

ORCHESTRATED INSTRUCTION:
A COOKING EXPERIENCE

It was thirty minutes before the regular school day at Ochoa Elementary School would begin, but many of the boys and girls in Mrs. Richards' third grade class were already involved in the planning and preparation for the day's activities.

As they entered the door of the classroom, they met "face-to-face" with a new yellow, teacher-made and illustrated storybook. It hung from the middle of the door frame on a string and said:



Several children read the book aloud as they entered and others gathered around, listening intently. Two of the children who were listening hurried to get a friend so that he might hear it also.

From the door the children moved quickly to the interest centers within the room talking in questioning and excited voices. They were recalling what the book in the door had said as well as the plans they had made with their teacher and the aide on the previous day. Yes it was certainly true! Today was the day they were going to make stew!

On this particular day three of the five interest centers within the room had been designated as cooking centers. At one center the children found a hot-plate, an electric frying pan, a package labeled "stewing beef", flour, shortening and seasonings. Near this center, written on a large sheet of paper, was the recipe for making stew. Two girls moved in closer to read the recipe, one supplying the words for the other when it was necessary.

At another cooking center the children were speculating about the names of and uses for the items they found. There were potato peelers, knives, potatoes, onions and a cutting board. They picked up the items for more careful examination in their effort to identify them.

The array at the third cooking center was equally interesting. Here the children found the carrots, a bell pepper and celery along with the necessary utensils for the preparation of the vegetables--knives, peelers, and a cutting board.

As the children moved from center to center talking and manipulating the items they saw, Mrs. Richards also moved from center to center asking and answering questions in an effort to help the children extend their language and knowledge. She helped by supplying labels for the things not familiar to some children and directed comments many times to specific individuals in a way that was illustrative of language extension and elaboration. She was consciously modeling language for all to hear. One particularly good example of this was evident when Carmen said: "Oh, I know what that is," - (picking up the potato peeler)- "it's like what my mother uses at home--like this," making an up and down motion with her hand.

Mrs. Richards replied, "Yes, Carmen, you're right. It's called a potato peeler. Your mother probably uses it to peel potatoes and other vegetables as she prepares them for you to eat."

At this point the aide moved in quietly and asked three children to go with her to the cafeteria for the large stew pan that would be needed later.

As they left the room, the program assistant also took a committee of five children and drove to a large super-market in the immediate neighborhood to purchase the last of the necessary ingredients for the stew--two cartons of frozen lima beans. Attention was directed and given to the many different brands of lima beans, the cost of each brand and the weight printed on each carton. The children also located the dried beans and canned beans and talked about the different ways they had seen them prepared in their homes.

One child in the group was given a dollar in change and with the help of his friends counted out the correct amount for the purchase, and happily paid the cashier. He carefully kept the sales slip and gift stamps for later use in the classroom.

On a previous day, another committee of children had also had an opportunity for a similar experience when they went to buy carrots. Such activities provide a greater involvement for all the children in the total organization and planning of an outcome in which they ultimately participate.

The other ingredients used in making the stew were purchased by the school with special funds allocated for this purpose. This slip was also kept for the children to use in later activities relating to their cooking experience.

Shortly after nine o'clock the children began to gather on the large oval rug in the room. Near the rug, Mrs. Richards had displayed a second copy of the stew recipe. This copy was later to be placed so it could be seen from the two cooking centers where the children were to prepare the vegetables.

After an informal discussion and sharing time, the recipe was read by several children to the total group and specific planning and directions for the morning's structured time began. Committee chairmen

moved with their respective committee members to the centers specified by the teacher on her planning board.

The children at two centers, writing and independent reading, were not immediately involved in the cooking activities but they worked independently as they knew from previous planning and experiences that they would participate later as the committees rotated and changed activities.

According to previous planning, Mrs. Richards, her aide and the program assistant began their work with the children, each at a different cooking center. Five children were at each center and all were engaged in conversation about the particular items at their center. Their attention was drawn to the recipe and they read it carefully, first noting the ingredients and the method of preparation. There was much verbal speculation and calculation concerning what their specific preparation of ingredients would contribute to the end product, the stew. This was a time when the many intellectual skills within each child were evident; e.g. observing, comparing and contrasting differences in ingredients, observations of sizes and shape of some of the vegetables in relationship to others and acquisition of labels for materials new to the children. It was also a time for the adults to be aware of attitudes such as frustrations, sharing, and success.

The committees worked approximately forty minutes before rotating. After the rotation the children worked for another forty minutes. By this time all the children had taken part in the preparation of the ingredients for the stew and had taken bites of the raw vegetables. They cleaned the various cooking centers, washing the utensils carefully, and moved to the area of the room near the stew pan and hot-plate where several children added the prepared ingredients and other things, i.e. seasonings, canned tomatoes and mushrooms. Together they read the last direction listed under method in the recipe. It said, "Simmer several hours." Considering their work well done, they began to move outdoors for exercise and fresh air.

The stew simmered and bubbled gaily for the remainder of the school day under many watchful eyes including those of numerous teachers and students who followed their noses to the source of the tempting aroma.

During the afternoon as the stew simmered, the children continued to concentrate on their morning's efforts as they recalled their activities and dictated stories about the stew to the teacher and program assistant.

At the end of the day the stew was placed in the refrigerator until "tasting time" the following day.

The stew-making experience was a highly motivating activity for the children and thus was the core of the curriculum in Mrs. Richards' classroom for several weeks.

The dictation given by the children to the teacher and program assistant, recalling their own involvement in the preparation of the stew was written and illustrated on ditto masters. The masters were reproduced and bound into individual books, complete with table of contents, stories, and activity pages, for each child. The following are sample pages:

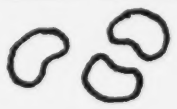
Jonathan said, "I was peeling potatoes and when Tony was peeling the onions, they made me weep. Then I cut my finger."

my left hand
the middle
finger

Lina remembered exactly how we made the stew, "First we put 5 cups of water in the pan," she said. "Then we floured the meat. We put the meat in the frying pan. It got brown. We put the meat in the pan of water. It started to boil. Then we put in pepper and salt. We put in lima beans. When we came back there were carrots in it. Next we put in bell pepper. We stirred it. We put in onions, too. And celery."

celery

Lima Beans



Please put these words in alphabetical order:

stew	bell pepper
potatoes	tomato sauce
onions	salt
celery	pepper
water	beef
lima beans	flour
pot	shortening
carrots	recipe

1. 4.
2. 5.
3. 6. etc.

Can you think of words that rhyme with stew?

1. 3.
2. 4. etc.

How we made stew.

First we read the r-----.

Victor diced the ---- ------, etc.

PS 00269

The books were then used as the basis of the structured reading lessons in the small committee work.

The invitation for children to write their own stories about the tasting of the stew was offered at the writing center. Mrs. Richards cut the writing paper into the shape of the stew pan. She later bound the pages, as the children had written and illustrated them, into an intriguing stew pan shape book. Copies of the individual storybooks along with the stew pan shape book were placed in the classroom library for free reading opportunities.

Further extension of the reading environment offered by the stew making experience was evident during the following weeks as the children, at the art center, busily painted a large mural with "bubbles of language," telling about the activities in their room on the day they made stew.

The opportunities for math from this experience were rich and a special math book was prepared for each child. The book was titled How to "Brew" Stew and consisted of five prepared pages and two blank pages. On one page was a copy of the stew recipe and on another was a price list for the cost of each ingredient in the stew. The activity pages were presented in a way that would involve the children in further recall, language sequence and extension; accurate mathematical computation through manipulation of real money and formulation of problems with abstract symbols; as well as answering open-ended questions. The two blank pages at the end of the book were to be used by each individual in any way he wished as an extension of his work. The following are sample pages from the math book:

Draw pictures to show the ingredients used in making the stew. Check the price list and record the cost of the ingredients.

beef onions lima beans

potatoes carrots celery

Name an ingredient you had never tasted before._____

How much did it cost?_____

Name the ingredient you like best._____

How much did it cost?_____

Read this page. The price list on page 4 will help you.

1. James and Johnny went to A.J. Bayless. They bought 1 package of celery and 1 bell pepper. How much did they spend?

celery _____
bell pepper_____
Total cost _____

2. Sue and Porfhelia went to A.J. Bayless. They bought 6 potatoes and 1 can of mushrooms. How much did they spend?

potatoes _____
mushrooms _____
Total cost _____

Did you use real money to help you?

It was interesting to learn from Mrs. Richards that some of the children had not known how to carry in addition but as they formulated their own problems in this lesson they created a need for this mathematical skill and followed through by acquiring the ability to do it accurately and with understanding.

The invitation for reading, writing and greater mathematical skills were given specific attention in this cooking experience but there were also constant evidences of awarenesses and extended concept development in the content areas of science and social studies. The teacher, and her aide acknowledged the childrens' attention to change and relationships, and led them to further concept developments in ways that made these areas an interrelated part of the total stew-making activity. A record of language interaction confirms this:

> As the children watched the stew cook, Guillermo commented, "The steam goes up into the sky and turns into water and it rains." Several children reinforced his conclusion in affirmative ways.

Mrs. Richards asked, "I wonder what would happen to our stew if it cooked for many days?"

Sylvia replied, "It would dry up."

Lina added, "It evaporates."

Changes were noticed continuously as the stew was being prepared. Mario recalled, "I put some flour on the meat. I put the meat and the flour in a plastic bag and then shaked it. It got white."

Alfred remembered, "The meat got sticky on the pan."

Lina told us, "We put the meat in a frying pan. It got brown. We put the meat in a pan of water. It started to boil."

Mrs. Richards helped them to give further attention to change. She said, "Notice how much softer the vegetables are now after they have been cooked."

Many related books were checked out of the library to serve as resource materials and literary extensions. The children read Stone Soup by Marcia Brown and The Carrot Seed by Ruth Krauss. They also enjoyed Crunch Crunch by Ethel and Leonard Kessley and Up Above and Down Below by Irma Webber. Betty Crocker's Dinner in a Dish Cook Book was used along with other recipe books and monthly magazines such as Family Circle and Sunset. They scanned many other magazines for colorful picturial representations of their stew and its ingredients.

Discussion during the preparation of the vegetables revealed some knowledge and a great deal of interest in "how" as well as "where" the vegetables were grown. Quite possibly this interest could be extended at a later date by a trip to a green house or nursery. The children might even choose to plant a garden of their own at school.

Ideas generate ideas and in working with children in such activities as the structured stew making, it is readily apparent that an exciting, open-ended and flexible approach to learning motivates all that are involved to greater concepts learned from extended content and curriculum. It is called orchestrated learning because it reflects the operation of the four principle goals in the program. The activity of making stew simultaneously attended to the developing of language, intellectual, motivational and societal skills.

The old adage, "Too many cooks spoil the broth" could not be farther from the truth. Everyone said, "It tasted delicious."

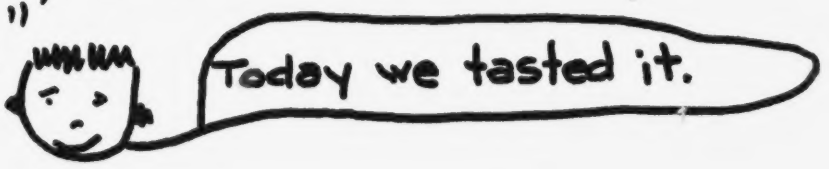
A P P E N D I X

SAMPLES OF THE CHILDREN'S WORK

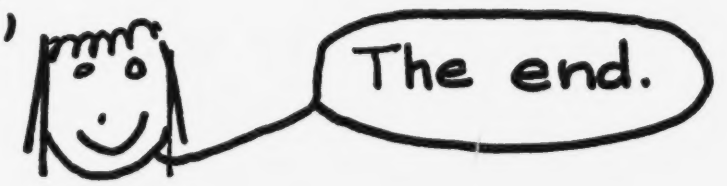
This section presents a few samples of the children's language, reading, and "drill" exercises associated with their experience of making stew.

The first five pages were dictated to the teacher for the talking murals. The next three pages present a reading exercise. You will recall (p. 7) of the text presented some of the arithmetic work. The last few pages are from the kettle-shaped book in which the children did the writing for themselves.

"I put some onions in the stew, right? Two spoons," said Marcelina, "it was yesterday."

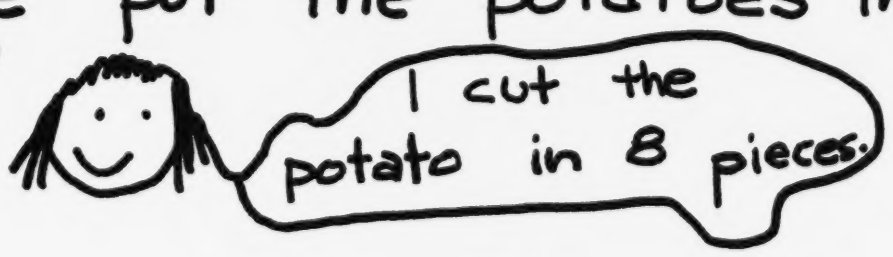


"Yesterday I peeled carrots for the stew. So we could put them in the stew. We peeled the carrots with a potatoe peeler," said Carmen.

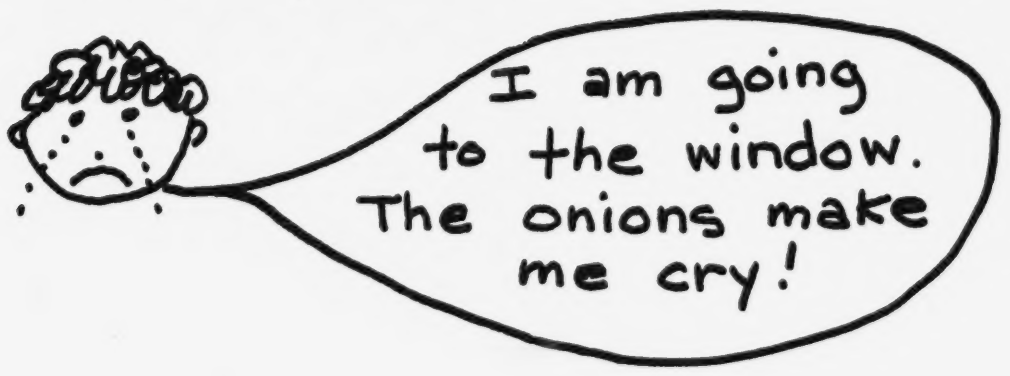


Johnny I. said, "We cut the carrots and we washed them and we put them in the pot."

Porfhelia said, "Let's see, we peeled the potatoes and we went to see the stew. The stew was boiling. We put the potatoes in the stew."



Jimmy smiled and said, "I peeled the potatoes, then I told Tony to do it and I did the onions. I was cutting onions and they made me cry. Then I went to the window and when I went back I was cutting the onions and they made me cry again!"



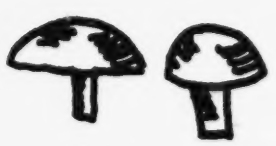
"We put the carne in the white stuff (flour). We put in green beans. We put pepper in. You know the giant, fat chile," said José.

"Yes," Mrs. Nelson replied. "It was a bell pepper."

José continued, "We're going to eat it tomorrow."

bell pepper

"The stew smells good," Sue said. The stew looks good. It has beef in it. And we put a little celery and carrots in it. And we're going to put some mushrooms in it."

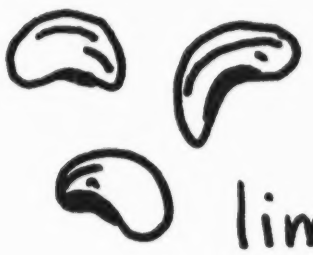


mushrooms

carrots

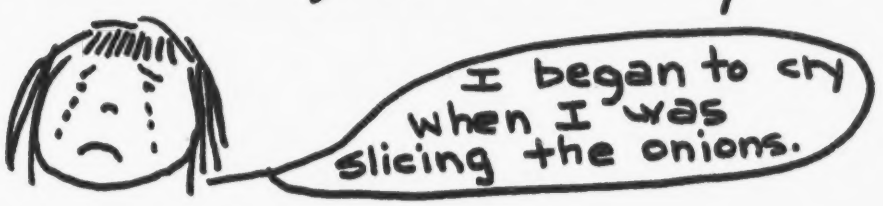
Lina remembered exactly how we made the stew. "First we put 5 cups of water in the pan," she said. "Then we floured the meat. We put the meat in the frying. It got brown. We put the meat in the pan of water. It started to boil. Then we put in pepper and salt. We put in lima beans. When we came back there were carrots in it. Next we put in the bell pepper. We stirred it. We put in onions, too. And celery. We're going to put tomato sauce and mushrooms in, too."

celery



lima beans

Sylvia gasped and said, " When we were in our committees, Mrs. Richards told us to peel potatoes and onions. When I was cutting the onions I began to cry."

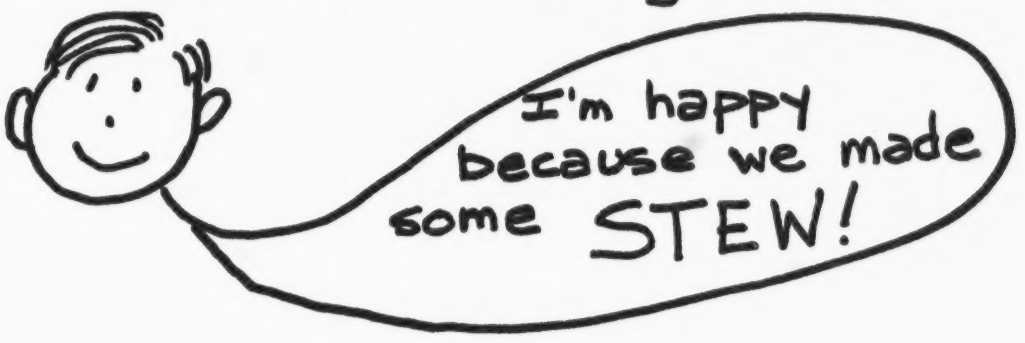


Jonathan said, " I was peeling the potatoes and when Tony was peeling the onions they made me weep. Then I cut my finger!"

my left hand
the middle
finger

Mario said, " I washed my hands then I put some flour

on the meat. Put the meat and the flour in a plastic bag and then shake it. It got white."



Can you fill in the blanks?

1. Rabbits love to eat this crunchy orange vegetable? -------

2. Some of the boys and girls went with Mrs. Nelson to buy frozen ---- -----

3. What round white vegetable made Jimmy and Ana cry? ------

4. Victor diced a green vegetable called a ---- ------.

5. The ------ sauce came in a can.

6. One committee diced the ------ for the stew.

7. Jonathan peeled the -------- before he chopped them.

8. One ingredient was small and brown and it came in a can. It was a can of ---------.

9. Alfred, Lorraine, José, Lina and Sue put ----- on the meat before they put it in the -------.

10. Johnny E., Mario, Frankie, Enedina, and Rosi floured the ---- before we put it in the skillet.

11. We used ---- and ------ to season the stew.

12. We all enjoyed ------- the stew.

13. The ---- tasted good.

Stew Words

carrots

celery

bell pepper

onions

stew

hot

beef

meat

mushrooms

lima beans

potatoes

tasted

sauce

brown

salt

white

pepper

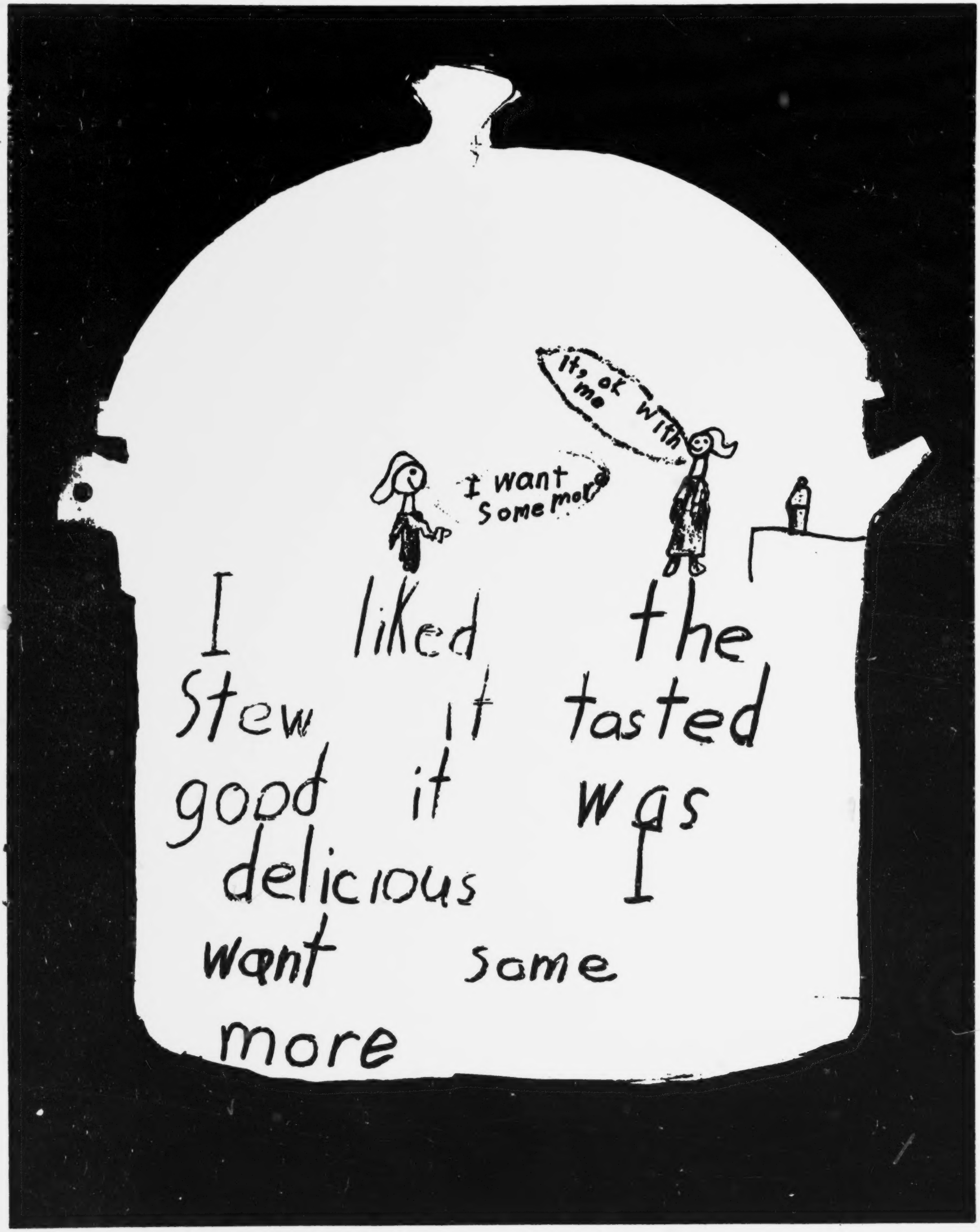
skillet

tasting

tomato

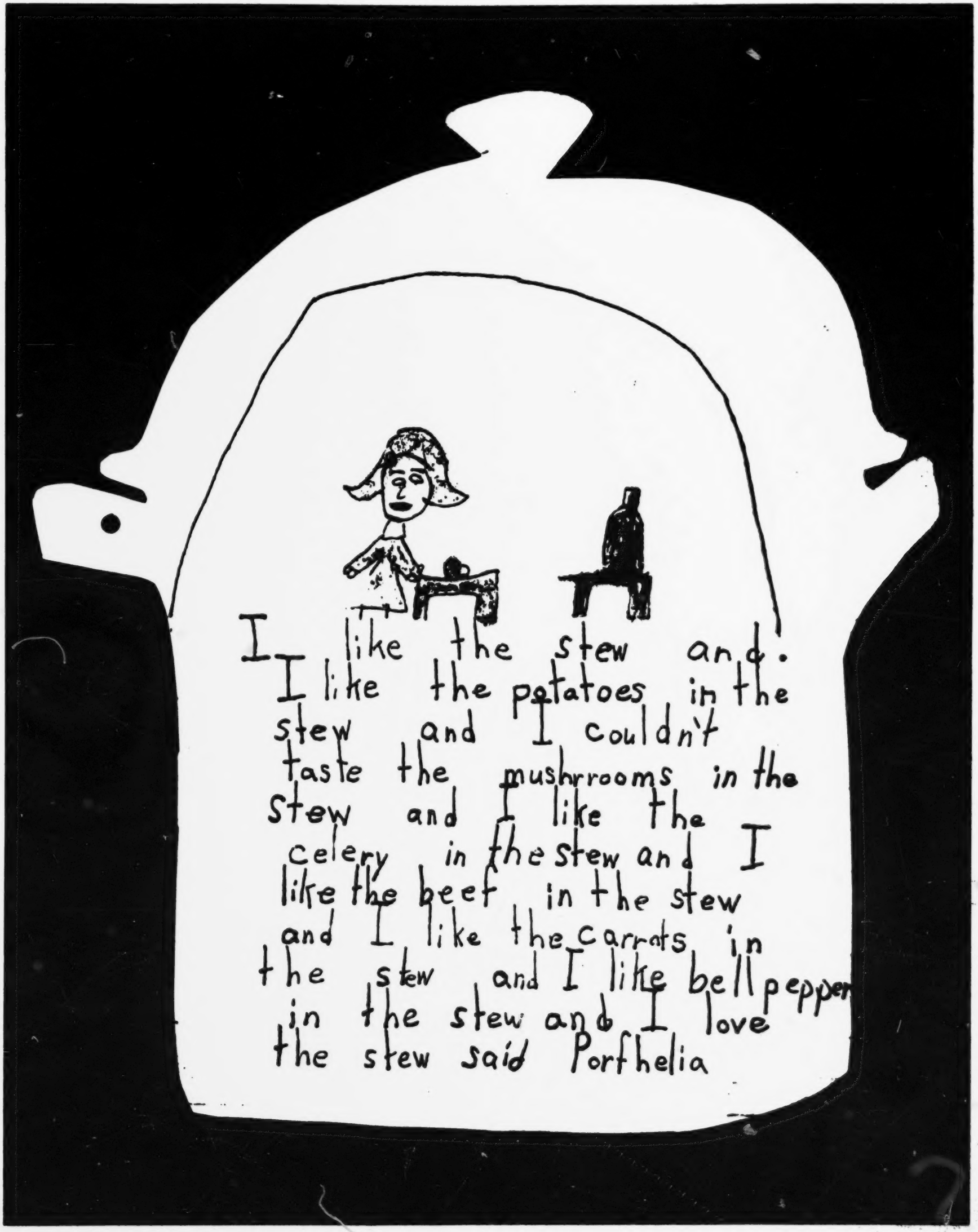
flour

The Lima Beans taste good. Yum-yum yum. Guillermo


It, ok with me
I want Some mor
I liked the Stew it tasted good it was delicious I want same more

Enedina

I like the Stew It tasted very good and I got to tasted the meat



I like the stew and.
I like the potatoes in the
stew and I couldn't
taste the mushrrooms in the
Stew and I like the
celery in the stew and I
like the beef in the stew
and I like the carrats in
the stew and I like bell pepper
in the stew and I love
the stew said Porthelia